

cundo nigro posticè albo super-marginato notatis; apice caudæ (brevis et gracilis,) et lineâ pilorum paulò pendentium infra collum ad pectus tendente, nigris. Habitat apud Tibetam Minorem. *Varietas dubia* minor, cornibus extrorsùm gyratis, cum angulo interiori prominentiori.

11. *O. Musimon*, Linnæus. *O.* cornibus compressis, ad basin triquetrioribus, angulo interiori prominentiori; lunatim gyratis, et sulcis transversim indentatis: colore pallido. Magnitudo *Arietis* parvi, caudâ brevi et magis villosâ quàm in specie præcedente: pilis rufo-brunneis; facie lividâ, cum capistro albo; ventre, clunibus, dimidiisque artuum inferioribus, albis; et lineâ laterali, caudâ, pectore, et membrorum plerumque dimidiis superioribus, nigris: maculâ triangulari albâ utroque lumbo sæpe (semper?) conspicuâ. Habitat apud insulas Corsicæ et Sardinia, et forsâ provinciam Murcia in Hispaniâ.

12. *O. Ophion*, Blyth. *O. Musimoni* simillima, sed cornibus retrorsis, apicibus accurvatis: pilisque brunneis, et non rufescentibus (?). Habitat apud Cyprum, et forsâ regiones alias Levantinas

13. *O. Ariès*, Linnæus.

14. *O.* —? *Ixalus Probaton*, Ogilby. Magnitudo *Arietum* maximorum, caudâ paulùm elongatâ: cornibus in specimine solo cognito abnormaliter (?) rudimentalibus. Pilis castaneo-fulvis, et infra albescentibus.

15. *O. (Ammotragus) Tragelaphus*. *O.* cornibus magnis subquadrangularibus, moderatè crassis, ad apicem compressoribus, sulcis transversim indentatis; divergentibus et retrorsùm curvatis, sed prope basin rectis, apicibus acclinatibus; colore pallido. Magnitudo *Cervi Damæ* superior, pilis flavescenti-brunneis; collo jubato, et infrâ cum pectore brachiisque capillato, caudâ elongatâ extremitate villosâ; facie non convexâ—ut in omnibus speciebus aliis, sinibusque suborbitalibus nullis. Fœminâ semper (?) cornutâ, cornibusque fortioribus quàm in fœminis specierum cæterarum hujus generis, quæ sæpe non cornutæ sunt, sed plurimæ cornua parva, tenuissima, et compressoriora ferunt, quæ in maribus junioribus aut curvata sunt, aut sæpe rectiora. Habitat apud Africa Septentrionalis montes rupestre.

EXPLANATION OF PLATE V.

Fig. 1. *Ovis Polii*; 2. Do. side view; 3. *O. sculptorum*; 4. Do. side view; 5. *O. californiana*; 6. *O. Nahoor*; 7. *O. Burrhel*; 8. *O. Gmelini*; 9. *O. Vignei*.

XXXII.—Notes on some of the smaller British Mammalia, including the Description of a New Species of *Arvicola*, found in Scotland. By the Rev. LEONARD JENYNS, M.A., F.L.S., &c.

THE following notes contain the results of some inquiries and observations respecting our smaller Mammalia, made since the publication of my 'Manual,' and my several papers

on the British Shrews, etc., in former volumes of this Magazine.

(1.) *Vespertilio Pipistrellus*, and *V. mystacinus*.—M. de Selys-Longchamps has favoured me with continental specimens of both these species, which prove identical with ours. I deem the circumstance worth mentioning, because, at the time of publishing my paper in the Linnæan Transactions on the common Bat of this country, it was thought by some persons that the proof of its identity with the Pipistrelle of the Continent, obtained from an actual comparison of specimens, was still wanting; and I am not aware of such comparison having been yet made until now.

(2.) *Vespertilio Daubentonii*.—I am quite aware of the error that I committed in my 'Manual,' in confounding this species with the *V. emarginatus* of Geoffroy; and I have not the slightest doubt of the correctness of Mr. Bell in referring the bat which I described under this last name to the *V. Daubentonii*.

(3.) *Vespertilio ædilis* (Ann. of Nat. Hist., vol. iii. p. 73).—MM. Keyserling and Blasius have given it as their opinion, that the bat which I described as new under the above name, is a mere variety of the *V. Daubentonii**. I myself alluded in my original paper to the possibility of this being the case; and I have now scarcely any doubt of the fact, as well from what the above authors have stated, more particularly with respect to the incision at the apex of the tragus occasionally varying in the two ears of one and the same individual,—as from the recent examination of a bat, undoubtedly referable to the *V. Daubentonii*, in which there was a slight approach to the form of tragus observable in the specimen on which I founded the above species. This last bat was taken in Ireland, and was kindly submitted to my examination by Mr. Thompson of Belfast.

I still think, however, that, though I committed an error, my paper will have been of use in calling the attention of British naturalists to the *fact* of the tragus occasionally varying in form in this manner, of which I do not apprehend they were generally aware any more than myself.

(4.) *Martes Foina*.—Mr. Bennett and Mr. Bell have both expressed doubts as to whether the common Martin be distinct from the Pine Martin †, though the latter gentleman has for the present kept them separate in his 'British Quadrupeds.' Mr. Eyton, in a paper recently printed in

* See No. 29 of this Journal, p. 149.

† See Mr. Bennett's remarks on this subject in the 'Gardens and Menagerie of the Zoological Society,' vol. i. p. 230.

this Magazine*, seems decidedly inclined to consider them as but one species; and until lately I was myself strongly disposed to embrace the same opinion. In the early part, however, of the summer of 1840, Mr. Henderson, of Milton Park, in Northamptonshire, was kind enough to send me two specimens of the common Martin, killed in that neighbourhood, both of which were young animals, and had probably been bred that year, as the milk-teeth had not yet been supplanted by the permanent set, and the bones of the head were very loosely united: nevertheless these individuals had the cranium larger and heavier than that of an adult specimen of the Pine Martin in Mr. Yarrell's collection, who also showed me several other crania of both species, of different ages, and satisfied me that they were distinct. At the same time it is evident, from the united observations of several naturalists, that the colour of the breast is no distinguishing character, and probably dependent upon either age or season. Mr. Eyton is of opinion that the breast is yellow in the young and white in the adult; and this would be confirmed by the specimens above alluded to, in both which this part was bright yellow tinged with orange.

These individuals were of the same size, and measured 17 inches in length, exclusive of the tail, which was not quite 9. The length of the cranium was 3 inches 4 lines; its breadth across the zygomatic arches 1 inch 10 lines; its weight 4 drachms 38 grains.

(5.) *Sorex rusticus*, and *S. Hibernicus*.—Since the publication of my paper on the British Shrews†, in which I first noticed the *S. rusticus*, and the Irish variety which I provisionally termed *S. Hibernicus*, I have been favoured by Mr. W. Thompson of Belfast with the opportunity of examining a large number of specimens of this last kind obtained in Ireland, and am quite satisfied as to its being a distinct species from the *S. tetragonurus*, but not from the *S. rusticus*, which I had previously obtained in this country, and of which I have since procured other specimens. In future, therefore, these two species, the *S. rusticus* and the *S. Hibernicus*, must be considered as the same; and I should have continued the former name in preference to the latter, as being, on the whole, more eligible, but for the circumstance of several specimens of this shrew having been transmitted to naturalists, abroad as well as at home, under the title of *S. Hibernicus*, and the probability that, if it be now changed to that of *rusticus*, it may entail some confusion. I have to request, therefore, that the name *Hibernicus* be hereafter adopted for this species, which, though not confined to Ireland, seems to be the com-

* No. 33, Dec. 1840, p. 290.

† Ann. of Nat. Hist., vol. i. p. 417.

mon species in that country, and much more abundant there than in England, where it gives place in a great measure to the *S. tetragonurus*. It has also been observed in very different localities in Ireland; and one specimen sent to me by Mr. Thompson was stated to have been taken in the county of Antrim, at an elevation of 1200 feet above the sea.

Everything that I have stated in the paper above alluded to, with respect to the characters of the *S. rusticus*, and the distinguishing marks by which it may be known from the *S. tetragonurus*, is applicable to the Irish Shrew, excepting as regards the cranium (p. 420); and I must beg, that what I have said on that point be considered as erased, having since ascertained that I was led into an error by the examination of a specimen, the cranium of which did not exhibit its true form from the manner in which it had been prepared. Moreover, it was this error which partly led me to regard the English and Irish specimens of *S. Hibernicus* as distinct. In fact, the cranium of the species just named does not differ from that of the *S. tetragonurus*, except in being much smaller. The following are their respective dimensions:—

	Length. lines.	Breadth. lines.	Height. lines.
Cranium of a middle-sized <i>S. tetragonurus</i>	$9\frac{1}{4}$	$4\frac{1}{4}$	$2\frac{3}{4}$
———— of an old full-grown <i>S. Hibernicus</i>	$7\frac{1}{2}$	$3\frac{1}{2}$	2

The dimensions indeed, generally, of this last species are so much less than those of the former, that it is hardly possible to mistake them, especially if attention be paid to the feet, and also to the tail and attenuation of the snout. Perhaps I have rather over-stated the average dimensions of the *S. Hibernicus* in my former memoir (called there *S. rusticus*), when I set them at “hardly $2\frac{1}{2}$ inches”; but I had not then seen so many individuals. None of those submitted to my examination by Mr. Thompson exceeded 2 inches and $2\frac{1}{2}$ lines; and I doubt whether in general the species much exceeds that size. The specimen to which I alluded as being 2 inches and 8 lines, I am now inclined to think must have been a *S. tetragonurus*, which often reaches 3 inches.

In respect to the internal structure of these two species, which I have examined and compared, I see no very important differences between them. The stomach is of a very peculiar form in both, having its pyloric portion so extraordinarily elongated, that it might easily be mistaken for a portion of the intestine itself. This, indeed, as well as other points in the anatomy of these animals, would deserve further notice, but for the circumstance of M. Duvernoy’s memoir*,

* Mém. de la Soc. du Mus. d’Hist. Nat. de Strasbourg, tom. ij: mém. 2.

so often alluded to in my former papers, in which they have been treated of in detail, and to which I must refer those who are interested in the subject. I may, however, make one or two remarks, as supplemental to his.

M. Duvernoy states the length of the intestinal canal in the *S. tetragonurus*, compared with the length of the body, to be as three to one, and rather more. In most of the specimens which I have examined, I have found it nearly as four to one, and in some instances even bearing a higher ratio than this; whilst the ratio of three to one more nearly accords with the case of the *S. Hibernicus*. The relative, however, as well as the absolute length of the intestinal canal, varies a little in both species, according to the size of the individual. I shall here annex the actual measurement of this, and one or two other parts, such as were observed, first, in a medium-sized specimen of the *S. tetragonurus*, and then in an old full-grown *S. Hibernicus*.

S. TETRAGONURUS.		inches.	lines.
Length of the head and body.....		2	7
—— of the tail		1	9
Greatest diameter of the distended stomach		0	7
Distance from the cardiac orifice to the pylorus, being } the length of the pyloric gut	}	0	10
Entire length of the intestinal canal, from the pylorus } to the anus	}	10	9

S. HIBERNICUS.		inches.	lines.
Length of the head and body.....		2	2½
—— of the tail		1	5
Greatest diameter of the distended stomach.....		0	6½
Distance from the cardiac orifice to the pylorus		0	9
Entire length of intestinal canal, as before		7	0

The number of ribs, which is not mentioned by Duvernoy, I find to be 14 in both species, of which 7 are true and 7 false.

The number of vertebræ was also found to be the same in the case of a single individual of each species, and may be estimated as follows:—

Cervical	7
Dorsal	14
Lumbar	6
Sacral	2
Caudal	15
Total	44

In a second specimen, however, of the *S. tetragonurus* the number of caudal vertebræ was as many as 16, whilst in a second of the *S. Hibernicus* it was only 14; thus showing that in each species it is subject to some variation.

In the above table I have estimated the number of sacral vertebræ as 2, according to Duvernoy, who, though he has not given the entire number in the column, has noticed the very peculiar and elongated form of these two, having a sharp ridge on their upper surface, much developed, and common to them both. It is evident, however, on a close inspection, that the first of these two vertebræ, which he speaks of as being the most elongated, is resolvable into 4, which are more or less consolidated together, according to the age of the individual. In some instances the lines of separation between them are so distinct, that they might be counted separately; in which case the entire number of vertebræ in the *S. tetragonurus* would stand at 47 or 48, and in the *S. Hibernicus* at 46 or 47.

I have deemed it of importance to mention these facts with respect to the vertebræ, from the circumstance of M. de Selys-Longchamps having found it a valuable character in distinguishing some closely allied species of *Arvicola*, and observed to me that he thought it might prove of equal service in helping to discriminate those of the genus *Sorex*. It appears, however, from what has been stated, that the exact number in the tail, in this instance, cannot be relied on.

(6.) *Sorex castaneus* (Ann. Nat. Hist., vol. ii. p. 43).— I have not been able to obtain any more specimens of this species*, and can therefore say nothing further as to its being really distinct from the *S. tetragonurus*. M. de Selys-Longchamps, who has paid so much attention to this genus, and to whom it was shown during his visit to London in 1839, declined giving any decided opinion about it; at the same time, he observed that he had never seen any individuals of the *S. tetragonurus* of so rufous a tint. I conceive, however, that the fact of a male and female having been found together, the latter of which was big with young when taken, rather tends to support the idea of its being distinct. Also, independently of its colour, and one or two other external peculiarities, there is a slight difference observable in the cranium, as already pointed out in a former paper†.

* The original specimens were not obtained in my own immediate neighbourhood, nor by myself, but in a fen distant some miles from me, and by a person who has since left the district; and I am ignorant of the exact locality in which he met with them.

† Ann. N. H., vol. i. p. 424.

I regret that, when I dissected one of the above specimens, soon after its capture, I did not notice the number of ribs and vertebræ, which might have helped to determine the question. This is a point to which attention should be paid by any naturalist who may be fortunate enough to meet with others. The viscera resembled those of the *S. tetragonurus*; the intestinal canal, however, being relatively a trifle longer than in that species, and measuring 10 inches 4 lines, the length of the body being 2 inches 4½ lines.

I may just observe, before quitting this species, that the shrew which Mr. Thompson obtained from Ballantrae, and considered as referable to the *S. castaneus**, has been kindly submitted to my examination, and proves to be only a pale variety of the *S. tetragonurus*; and it is at his own request that I mention this circumstance. In both my specimens of the Chestnut Shrew, the rufous tint, in the recently killed animal, was quite as bright and decided as in the harvest-mouse or squirrel.

(7.) *Sorex fodiens*.—The peculiar form of stomach noticed above in the case of the *S. tetragonurus* and the *S. Hibernicus*, is probably to be found in all those shrews having the same type of dentition as those species, and belonging to Duvernoy's subgenus *Amphisorex*†. In the *S. fodiens*, which has a distinct dental formula, and constitutes the subgenus *Hydrosorex* of Duvernoy (*Crossopus* of Wagler), the stomach is of a somewhat globular form, and without any elongation of the pyloric portion whatever.

In a female specimen of this species, 2 inches 11 lines in length, exclusive of the tail, the following internal measurements were observed:—

	inches.	lines.
Diameter of the distended stomach	0	11
Distance from the cardiac orifice to pylorus	0	3½
Length of the intestinal canal	15.	0

In another female, exactly of the same length, the intestinal canal was found to be only 12 inches 9 lines, showing that this part is subject to considerable variation in respect to extent. Neither in this, nor in any other species of this genus, is there any cæcum, or much distinction between the small and great intestines, the diameter of the canal being nearly everywhere the same.

The number of ribs in the *S. fodiens* is 13, 1 less than in the *S. tetragonurus*; whereof 7 are true and 6 false.

* Charlesworth's Mag. of Nat. Hist., vol. iii. p. 585.

† Supplement to his first memoir, 1838.

There are 6 lumbar vertebræ and 17 caudal, there being 1 more of these last than in any specimen of the *S. tetragonurus* yet examined; and the entire number of vertebræ will stand at 45 or 48, according as the sacral are reckoned at 2 or 5 as before. This estimate was obtained from an examination of three specimens.

(8.) *Sorex ciliatus*.—I have seen so many intermediate specimens, in point of colour, between this and the last species, that I consider it extremely doubtful whether they be distinct. Nevertheless, it deserves to be mentioned, that in one very dark-coloured individual of the *S. fodiens*, and which was sent to me as the *S. ciliatus*, though it was not quite so uniformly black as my original specimen of this latter, or so bulky for its length, I found 18 caudal vertebræ, being 1 more than in any of the three individuals of the *S. fodiens* above-mentioned. This must not be considered as conclusive in favour of the *S. ciliatus* being a species, as we have already seen the number of caudal vertebræ varying by 1, in the case of the *S. tetragonurus*; yet it should serve to stimulate to further inquiry. I regret that I have not myself had an opportunity of examining into the value of this character in more specimens.

I once thought that there were other anatomical peculiarities by which this species might be distinguished from the *S. fodiens*, to which M. de Selys-Longchamps has made some allusion*; but having since had reason to suspect that they are not to be relied upon, I forbear dwelling on them.

(9.) *Mus sylvaticus*?—I have two or three times had submitted to my examination specimens of a mouse found on the tops of the Irish mountains, either belonging to this species or very closely allied to it; but those which I have seen have been in too bad condition (merely dried skins) to enable me to decide this point. One of these was taken in the county of Kerry, at an elevation of 2500 feet above the sea-level. The only respects in which they appear to differ from the *M. sylvaticus* are, in being of a darker colour, smaller, and with some of the relative proportions rather less; but it must be left for those who have an opportunity of examining a large number in the recent state, to say whether there are any real grounds for believing them to be distinct. On the whole, I am inclined to think that they are only a small variety of that species, somewhat modified in its characters from the peculiar locality which they inhabit.

(10.) *Arvicola amphibius*.—Not long since I obtained a small Water Vole, which I consider exactly intermediate

* Micromammalogie, p. 29.

between the *A. amphibius* and the *A. ater* of MacGillivray. The following is a correct description of the colours :

Extreme tip of the snout dusky ; cheeks and upper part of the head very deep brown, with a slight reddish tinge, the tips of the hairs being of this colour ; back, from between the ears to the root of the tail, wholly black, the short pile as well as the long hairs being of one uniform tint throughout ; sides very deep brown, slightly tinged with reddish ; belly deep ash-grey, with a tinge of reddish like the sides ; chin ash-grey, without the reddish tinge, which is deepest just beyond the contour of the chin, and between the fore-legs ; all the feet covered with very short black hairs above, smooth and naked and paler underneath ; tail black, and of one colour throughout.

The length of this individual was 5 inches 3 lines, exclusive of the tail, which was 3 inches 3 lines. I have observed, like Mr. MacGillivray*, that the black variety of this species is generally much smaller than the brown. Yet I have known a few instances to the contrary ; and one individual, which was the most uniformly deep-coloured one I ever saw, was also the largest. I regret, however, that the note which I made of its exact dimensions has been lost.

(11.) *Arvicola arvalis*.—This species, like the last, appears subject to some variation of character, particularly as regards colour ; so much so, as at one time to have led myself, as well as others, to suspect there might be two species confounded under one name.

Two individuals which I have had by me in spirits several years, have the feet and tail yellowish, as described by De Selys-Longchamps†, the latter being entirely of one colour ; the fur above reddish brown, with the ears appearing out of it ; the hair on the under parts of the body rather short and thin, and greyish white, the basal portion of each hair being ash-colour. The larger of these individuals was a female taken in the breeding season, measuring 4 inches 1 line in length, exclusive of the tail, which was 1 inch $3\frac{1}{2}$ lines. The upper parts in this specimen were quite as red as in the *A. rubidus* of De Selys.

I have since, at different times, obtained many other individuals, in which the snout, feet and tail were deep ash-grey, approaching to dusky instead of yellowish ; the tail also exhibiting an appearance of two colours, as in the *A. rubidus* and *A. subterraneus* of the above author. Some of these had the fur as described above ; but in others it was

* Naturalist's Library, vol. vii. (Brit. Quad.) p. 264.

† Micromammalogie, p. 106.

rather longer, reducing the ears to nearly its own length; and the hair on the under parts was not only longer and thicker, but darker at the roots, a considerable portion from the base upwards being dusky.

Similar to these last described are several individuals in the Museum of the Zoological Society, which, being shown to M. de Selys-Longchamps during his visit to London in 1839, he was at first inclined to think different from the *A. arvalis* of his work. However, in a subsequent communication by letter to this country, he writes word that he has, since the publication of his 'Études de Micromammalogie,' obtained information with respect to the *Mus agrestis* of Linnæus, found in Sweden; and he says that it appears to be the same as his *Arvalis*, only the colour of the Swedish individuals is rather darker, and the upper part of the tail darker than the under. He then adds, that he had observed a similar local variety in the collection of the Zoological Society, and that he does not think that it is specifically distinct from the common *Arvalis*.

That this opinion is correct I have but little doubt; and I conceive that the variation in the length and colour of the fur is probably dependent upon season, though the difference of colour in the feet and tail in some specimens can be traced to no particular cause.

(12.) *Arvicola neglecta*, Thompson.—For some time I was inclined to consider also as a mere variety of the *A. arvalis* some specimens from Scotland, the first of which I received from Mr. Thompson so long back as the spring of 1839. To the kindness and liberality, however, of this gentleman I have lately been indebted for permission to examine a much larger number of the same kind of *Arvicola* collected last autumn at my request, and after a close comparison of both sexes of different sizes with English individuals, I am inclined to think that they deserve to rank as a distinct species. I should say that Mr. Thompson had been previously led to form this opinion, and that it was also the opinion of M. Agassiz, to whom he showed specimens, on the occasion of that naturalist's visit to Scotland last summer. I have accordingly adopted Mr. Thompson's own name *neglecta* for this species, of which he is the discoverer, and which he has merely put into my hands to describe.

Mr. Thompson informs me that this new *Arvicola* is common on moors in two localities in the district around Megarnie Castle in Perthshire, where he first observed it himself, whilst shooting, in 1829. He has also received it from some sporting friends at Aberarder in Inverness-shire. At this last

place it was taken in traps set for vermin on broken rocky ground at the base of the glens: it was also caught by the dogs, and knocked on the head by the shooters, in the heathy tracts up to the summits of the mountains; and he adds, which is worthy of remark, that, from want of speed, it was much more easily killed than the common mouse or rat.

The most striking peculiarity in this new species is its large size compared with that of the *A. arvalis*. Both males and females occur measuring five inches in the body without the tail; and it is said that they are sometimes met with five and a half inches long, or even exceeding this. The following are the relative proportions of a male specimen of medium size, according to Mr. Thompson:—

	in.	lin.
Head and body	5	0
Tail to end of bone	1	3
Tail to end of hair	1	6
Head	1	7½
Ears	0	5
Whiskers	1	0
Fore-foot	0	5½
Hind-foot	0	10

A female of the same size preserved the same relative measurements, excepting that the hind foot was shorter by half a line. I observe, amongst the specimens he has sent myself, that the males have generally the feet and tail somewhat larger and stouter than the females. The same thing, however, occurs to a less degree in the *A. arvalis*.

As regards external form, including the characters of the snout, eyes, ears, feet, toes, and tubercles on the soles, it is similar to the common species. In each also there is the same number of mammæ, four pectoral and four inguinal*.

The general colour of the upper parts is also the same; but the fur is everywhere considerably longer, so as to cause the ears to be entirely concealed; and its greater length, as well as the greater quantity of it, is especially obvious on the under parts, where it is also darker at the roots, and of a rather purer white at the tips of the hairs. Some specimens are more rufous above than others; but the brightness of the tint appears to have no constant connexion with the sex or size of the individual. The colour of the feet and tail, in all cases, is dusky; the latter somewhat darker above than below, as in the

* This is of importance to be noted, since in the *A. subterraneus* of De Selys, a closely allied species found in Belgium and France, and possibly to be met with in this country, the number of mammæ is only six, all of which are inguinal.

dark-coloured variety of the *A. arvalis* noticed under the head of that species.

With a view to inquire still further into the characters of the *A. neglecta*, by permission of Mr. Thompson I dissected several specimens, and compared their internal structure with that of the *A. arvalis*; but, excepting in the cranium to be hereafter noticed, no very obvious differences presented themselves. There are a few points, however, in relation to this subject, which may be worth stating.

The length of the intestinal canal, as well as the relative length of its different portions, both in the *A. neglecta* and the *A. arvalis*, varies much in different individuals, and even in individuals of the same size and sex. Mr. Yarrell* and Mr. MacGillivray† have both given measurements of these parts in the *A. arvalis*, which are very different from each other, but which, as the latter gentleman has not mentioned the size of the individual from which they were taken, do not admit of direct comparison. I shall annex the results which I obtained in three different instances of the *A. neglecta*, and one of the *A. arvalis*.

	No. 1.		No. 2.		No. 3.		No. 4.	
	in.	lin.	in.	lin.	in.	lin.	in.	lin.
Small intestines ...	13	3	14	9	9	9	10	3
Cæcum	6	0	7	9	4	0	3	9
Large intestines ...	12	6	15	0	9	0	7	0

No. 1. was a male *neglecta*, measuring four inches in length, exclusively of the tail. No 2. was a female of the same species, and exactly of the same size. No. 3. was a young male of the same species, measuring three inches. No. 4. was a male *arvalis*, exactly of the same size as No. 3. It will be observed, that Nos. 3. and 4, which are different species, do not differ more in this respect than Nos. 1. and 2, which are sexes of the same.

Another part which I found varying in different individuals was the gall-bladder. It is observed in anatomical works that this organ is found wanting in many of the *Rodentia*, particularly among the Rats †. Mr. Yarrell observes, that both the field and bank Campagnol are equally devoid of it. If it be really the fact, that it is never present in the former of these two species, this circumstance will tend to the confirmation of the *A. neglecta* being distinct, in which I have observed it in the only three cases I have examined, though of such different degree of development as to lead to the suspicion that

* Lond. Mag. Nat. Hist., vol. v. p. 600. † Brit. Quad., p. 267.

† Blum. Man. Comp. Anat., by Lawr. (2nd edit.), p. 128.

it may sometimes be wanting here also. In one individual it was of considerable size, attaining to the margin of the liver; in a second it was less; in a third it was very small, but still obvious. I have not observed it, any more than Mr. Yarrell, in the true *A. arvalis*.

The *A. neglecta* and the *A. arvalis* agree in the number of vertebræ. M. de Selys-Longchamps has given the entire number in the latter as forty-six, which accords with the number given by Mr. Yarrell, as well as with that observed by myself in several individuals of each of the above species, unless a very minute rudimentary one at the extremity of the tail be included, in which case the entire number must be set at forty-seven. In one instance, however, of the *A. neglecta*, a female, I found an additional caudal vertebra, making the entire number forty-seven without the rudimentary one. This affords another proof of the caution that is required in drawing any conclusion as to the number of vertebræ from the examination of single specimens.

The number of ribs was in all cases the same for both species, seven true and six false; being also the number given to the *A. arvalis* by De Selys.

The only part of importance remaining to be mentioned is the cranium. I have examined that of three individuals of the *A. neglecta*, and, though in general form the same, I find it decidedly larger, broader across the zygomatic arches, and with the bones of the zygoma itself stronger, than that of the *arvalis*, comparing two individuals of the same size in other respects. In the adult animal, the strength and bend of the zygomatic bones become very considerable, indicating great muscular powers in biting and masticating its food. The following are the relative measurements of the crania of a large and small *A. neglecta*, and also of that of the *A. arvalis* for comparison.

	No. 1. in. lin.	No. 2. lin.	No. 3. lin.
Entire length	1 0	11	10½
Breadth across zyg. arches	0 7 barely.	6 exceeding.	5¾
Breadth behind the zyg. arches	0 5¼	4¾	4¾

No. 1. is that of an individual of the *A. neglecta*, measuring four inches in length, tail excluded. No. 2. is that of another individual of the same species, measuring three inches. No. 3. is that of an individual of the *A. arvalis*, exactly of the same size as the last.

Having entered above, in some detail, into the characters of the *A. neglecta*, and the grounds on which I venture to confirm Mr. Thompson's opinion, as to its being distinct from

the *A. arvalis*, it may be useful just to place side by side the essential differences between these two species, which after all are not very great, and on the true value of which I do not pretend to speak positively.

A. arvalis.—Body 4 inches : ears projecting out of the fur : colour of the fur above reddish brown ; beneath greyish white, the hair sometimes dusky at the roots.

A. neglecta.—Body 5 or $5\frac{1}{2}$ inches : fur long, entirely concealing the ears : colour of the fur above reddish brown, beneath whitish, with a large portion of the hair from the root upwards dusky.

To these differences may be added the absence of a gall-bladder in the *A. arvalis*, and its presence in the *A. neglecta*, if further observation prove the constancy of this character ; also the differences in the cranium above pointed out.

(13.) *Arvicola rubidus*, De Selys? (*A. riparia*, Yarr.)—I cannot but feel some doubts as to the identity of the *A. riparia* of Mr. Yarrell and the *A. rubidus* of De Selys, notwithstanding the opinion of this last author, from the striking difference observable in the cranium of our English specimens, as compared with the figure and description of this part in the *A. rubidus*, given in the ‘Micromammalogie.’ M. de Selys says of this last, “*crâne plus allongé que chez les autres;*” and again, “*orbites moyens, allongés, étroits en arrière, les arcades zygomatiques étant peu arquées.*” His figure is according to this description, and represents the length of the cranium as rather more than twice its breadth across the zygomatic arches. But neither will agree with a cranium in my possession, which is not more elongated than that of the *A. neglecta*, spoken of above, and in which the orbits are as broad, and the zygomatic arches as much bent, as in that species, the breadth across being considerably more than half the entire length. This cranium belongs to an *Arvicola*, which was obtained by Mr. Thompson from Aberarder, where it was taken in company with the *A. neglecta*, and along with which it was kindly forwarded to me in 1839. Neither he nor myself had any doubts of its being the *A. riparia* of Yarrell, though in size it rather exceeded any specimens I had seen previously. The following were its measurements :—

	in.	lin.
Head and body	3	9
Head	1	$0\frac{1}{2}$
Tail	2	0
Ears	0	$4\frac{1}{4}$
Hind-foot	0	8
Fore-foot	0	$4\frac{1}{2}$

It will be seen that the tail was more than half the length of the body : it was also of two colours, as in the *A. riparia*, dusky above, whitish beneath. The ears were apparent out of the fur; and the general colours were those of the species just mentioned.

I will now annex the exact relative measurements of the cranium :—

	lines.
Entire length	11
Breadth across zygomatic arches	6½
—— behind the zygomatic arches ...	5½
Length of the nasal bones	3 rather exceeding.
Breadth of the nasal bones	1½
—— of space between orbits	1¾
Length of the orbit	4 nearly.
Breadth of the orbit	2¼

Though much bent, the bones of the zygomatic arches are very slight compared with those of the *A. neglecta*, or even the *A. arvalis*. The incisors also are shorter and slenderer. All the molars above and below are deeply stained with a purplish ebony colour, pervading nearly the whole exposed portions of the teeth, except their grinding surfaces. There is only a faint stain of this colour on the molars of the *A. neglecta* and the *A. arvalis*.

Though this cranium appears so dissimilar to that of the *A. rubidus* of De Selys, as represented in his work, it closely resembles his figure of that of the *A. duodecimcostatus*; a species, however, to which it cannot be referred, inasmuch as the specimen described above had the same number of ribs as the *A. arvalis*.

The number of vertebræ I am not able to state, as previous to my having an opportunity of examining its internal structure, the specimen had been deprived of a portion of its tail*.

I may, however, add the measurements of the intestinal canal :—

	in.	lin.
Small intestines	14	9
Cæcum	4	9
Large intestines	8	6

These measurements will be found very different from those given by Mr. Yarrell; but as we have already seen how liable to variation these parts are in relative length, and as Mr. Yar-

* I may just state in explanation, that after examining its external characters in 1839, the specimen was returned to Mr. Thompson, who had it skinned, I imagine, for mounting. The body was afterwards forwarded to me in spirits for dissection, in a mutilated state.

rell's specimen was much smaller than mine, too much stress must not be laid on this circumstance. It deserves to be noticed, however, that this specimen had a gall-bladder like the *A. neglecta*, small yet quite distinct, which Mr. Yarrell's had not. Hence this organ is certainly sometimes present, and at other times absent, in the same species, unless we imagine, which I conceive very improbable, that the one here described was different from his.

The stomach was of the same form as in the *A. arvalis* and *A. neglecta*. The liver consisted of seven distinct lobes, five large and two smaller ones.

I have already stated that this specimen was taken at Aberarder, in Inverness-shire; and Mr. Thompson informs me, that, supposing it to be the *A. riparia* of Mr. Yarrell, he believes it to be the most northern British habitat for this species.

Swaffham Bulbeck, April 26, 1841.

XXXIII. — *Supplement to a Catalogue of Irish Zoophytes*. By ARTHUR HILL HASSALL, Esq. Read before the Natural History Society of Dublin, November 6th, 1840.

[With Five Engravings.]

Mr. Chairman and Gentleman,

As to many of my hearers the subject of the present communication, entitled a 'Supplement to a Catalogue of Irish Zoophytes,' published in the November Number of the 'Annals and Magazine of Natural History,' may be altogether new, I propose, before entering upon the consideration of it, to make some observations on Zoophytes generally. This course will, I hope, serve both to interest my audience, as well as to relieve, in some measure, the tediousness of a mere enumeration or technical description of species, which, however valuable to science itself, possesses but little to attract or engage the attention. The most careless wanderer on the sea-shore must often have noticed the beauty and delicacy of the conformation of these interesting productions, rivalling in their purity and freshness the element which they inhabit and adorn, and have been struck with wonder and admiration at the evidence of designing care which they so remarkably exhibit even in their general appearance. Nor is the beauty and elegance so observable in their outward form diminished by a closer inspection. If the power of a microscope be applied to them, and their more intimate structure be disclosed, new beauties